



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/719,968

11/21/2003

S. Ben Choi

1-24440

3571

46582

7590

08/11/2005

MACMILLAN, SOBANSKI & TODD, LLC
ONE MARITIME PLAZA - FOURTH FLOOR
720 WATER STREET
TOLEDO, OH 43604

EXAMINER

SUN, XIUQIN

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

58

Office Action Summary	Application No.	Applicant(s)	
	10/719,968	CHOI, S. BEN	
	Examiner	Art Unit	
	Xiuqin Sun	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-22 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-12, 14-22 and 24-26 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>06/06/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waston (U.S. Pub. No. 20030182041) in view of Fukatani (U.S. Pat. No. 5765118).

Waston teaches a method for estimating a propensity of a vehicle to rollover, the method comprising the steps of: determining lateral kinetic energy of said vehicle (sections 0101 and 0102); measuring a lateral acceleration of said vehicle (section 0030, lines 1-7); and determining a rollover potentiality index in response to said lateral kinetic energy value and said lateral acceleration (section 0033, lines 7-15; section 0179, lines 13+ and section 0181).

Waston does not disclose expressly: said lateral kinetic energy of said vehicle is determined in response to vehicle longitudinal velocity and vehicle side slip angle.

Fukatani teaches an algorithm for determining a lateral speed and further lateral kinetic energy of a vehicle in response to vehicle longitudinal velocity and vehicle side slip angle (col. 10, lines 7-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waston's algorithm as taught by Fukatani to determine lateral kinetic energy of said vehicle in response to vehicle longitudinal velocity and vehicle side slip angle for the purpose of simulating a vehicle rollover condition more accurately (Fukatani, cols. 9-10, lines 66-11).

Allowable Subject Matter

3. Claims 2-12, 14-22 and 24-26 are allowed.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 2-12 and 14 is the inclusion of the method step of determining a rollover index by weighting said rollover potentiality index by a factor of said lateral acceleration. It is this limitation found in each of the claims, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 15-22 is the inclusion of the limitation of a controller for determining a side slip angle and for determining a rollover potentiality index in response to weighting said rollover potentiality index by a factor of a measured lateral acceleration for determining a rollover index. It is this limitation found in each of the claims, as it is claimed in the combination that has not been found, taught

or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 25 is the inclusion of the method step of determining a rollover index by weighting said rollover potentiality index by a factor of said lateral acceleration; wherein said rollover potentiality index is represented by the formula:

$$\Phi_o = \frac{1}{2} |V_x \beta|^2 - \sqrt{g^2 + a_{ym}^2} \sqrt{d^2 + h^2} + d a_{ym} + h g ,$$

where V_x is said vehicle longitudinal velocity, β is said vehicle side slip angle, g is a gravity constant, a_{ym} is said measured lateral acceleration, d is one half a vehicle track width, and h is a nominal center of gravity height. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claims 24 and 26 is the inclusion of the limitation of a controller for determining a side slip angle and for determining a rollover potentiality index in response to weighting said rollover potentiality index by a factor of a measured lateral acceleration for determining a rollover index; wherein said rollover potentiality index is represented by the formula:

$$\Phi_o = \frac{1}{2} |V_x \beta|^2 - \sqrt{g^2 + a_{ym}^2} \sqrt{d^2 + h^2} + d a_{ym} + h g ,$$

where V_x is said vehicle longitudinal velocity, β is said vehicle side slip angle, g is a gravity constant, a_{ym} is said measured lateral acceleration, d is one half a vehicle track width, and h is a nominal center of gravity height. It is this limitation found in each of the

claims, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

5. Applicant's arguments received 06/06/2005 with respect to claim 1 has been considered but are moot in view of the new ground(s) of rejection.

Claim 1 is rejected as new prior art references (U.S. Pub. No. 20030182041 to Waston and U.S. Pat. No. 5765118 to Fukatani) have been found to teach the limitation argued by the Applicants. Detailed response is given in section 2 as set forth above in this Office Action.

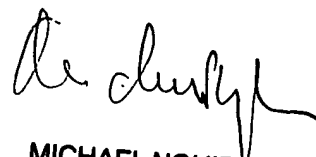
Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (571)272-2280. The examiner can normally be reached on 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571)272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

XS
August 8, 2005


MICHAEL NGHIEM
PRIMARY EXAMINER

Xiuqin Sun
Examiner
Art Unit 2863